Amblyopia

How should we manage an amblyopic patient with cataract?

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The decision to operate depends on a clear understanding of symptoms, functional impairments, and surgical outcomes in this patient group

Approximately 3% of the population have a history of amblyopia or strabismus. In all, 300 000 cataract operations are performed each year in the United Kingdom.[1] Consequently, about 9000 cataract extractions are performed for amblyopic patients, which equates to the annual cataract workload of two large provincial hospitals. It is not always easy to decide when to operate on cataract in amblyopic patients and with rising patient expectations from cataract surgery we may be confronted with such decisions with increasing frequency. With growing demands on resources there is pressure for these decisions to be made using a good evidence base.

We performed a literature search on Medline from 1951 and Embase from 1974. There were no publications that specifically addressed amblyopia and cataract surgery. We present a review of the current literature in areas relevant to amblyopia and cataract.

HOW DO WE JUDGE THE NEED FOR CATARACT SURGERY?

Much of the visual input from the amblyopic eye is usually suppressed, so it might be expected that cataract in this eye would not significantly affect the patient's quality of life. However, patients are frequently symptomatic and request cataract surgery on the amblyopic eye. Studies on the effect of cataract on the patient tend to exclude patients with amblyopia.[2 3]

Evidence has recently emerged that the amblyopic eye is very sensitive at detecting blur (one of the principal effects of cataract) despite reduced visual acuity and contrast sensitivity. Even severe amblyopes are able to complete blur matching tasks which require matching of edge sharpness despite the fact that the spatial composition of these edges is outside their visible resolution range. This ability is the same for strabismic, anisometropic, and mixed strabismic/anisometropic amblyopes.[4] In some patients cataract causes a reduction in the visual acuity of the amblyopic eye, but this work suggests that cataract can also cause symptoms of blur long before the visual acuity of the amblyopic eye has been affected.

Glare is another indication for cataract surgery and this will possibly affect amblyopic patients in much the same way as it does the general population. Cataracts often cause other symptoms such as haloes, misty vision, colour vision disturbance, and monocular diplopia. The extent of these symptoms and impairments of visual functions in amblyopic patients with cataract are not well documented. There is debate as to how much of the visual field of the amblyope is suppressed during binocular viewing. It probably depends upon the severity and type of amblyopia, but the temporal crescent at least, is spared in most cases. The finding that esotropic patients gain an improvement in their binocular visual field from correction of their squint[5 6] demonstrates that there can be a significant contribution to the visual field from the amblyopic eye. Cataract causes uniform depression of contrast sensitivity across the visual field.[7 8] It is not known to what extent this reduced sensitivity affects amblyopic patients with cataract.

It is our experience that amblyopic patients, in common with other patients who have reduced visual acuity in one eye for other reasons, may have to wait until their visual acuity has dropped to a lower level than in otherwise healthy eyes before cataract surgery is performed on the better eye. This is because the consequences of reduced vision as a result of surgical complications are more serious in ''only eyes'' and so there is increased risk for the same degree of benefit from surgery. The extent to which this happens is not known and no guidelines exist to assist the decision making process.

WHAT ARE THE EXPECTED SURGICAL OUTCOMES?

Some surgeons believe that cataract extraction in amblyopic eyes is beneficial. However, the nature and extent of the perceived benefits are poorly defined. No papers have been published that specifically address the benefits, if any, of cataract surgery in amblyopic patients.

In the National Cataract Surgery Survey 1997–1998,[1 9] there were 206 (1.4%) amblyopic patients out of 14 528 operations performed. Of these, 50% achieved a visual acuity (VA) at postoperative hospital discharge of 6/12 or better, compared to 77% of those without amblyopia. However, because this group was not targeted for particular attention there is no more information on this group, such as the comparison of postoperative with preoperative VA, the presence or absence of other ocular co-morbidity, or the incidence of intraoperative or postoperative complications. Moreover, although ocular co-morbidity was associated with a higher risk of a poor visual outcome with an odds ratio of 2.7, the odds ratio for amblyopia alone was not defined. The age profile of this group of patients (age being the most important risk factor for a poor outcome with an odds ratio of 4) is also not provided. Although other studies have elaborated the benefits of surgery when cataract is found in combination with other conditions such as age related macular degeneration,[10 11] such findings cannot necessarily be extrapolated to other types of co-morbidity.

It has been shown that second eye cataract surgery is likely to be beneficial in symptomatic patients with visual acuity less than or equal to 6/18, not only in terms of improved monocular visual acuity, but also by restoration of binocular summation and stereopsis.[12 13] This effect is likely to be significant for some anisometropic amblyopes but not for strabismic amblyopes with suppression. In anisometropic amblyopia correction of the anisometropia will lead to correction of the aniseikonia to which the patient has already adapted. This may lead to loss of fusion and reduction in binocular function. Great care must be taken when cataract surgery is carried out in the amblyopic eye before the better eye. If the amblyopic eye has better acuity after surgery than the fellow eye with cataract, then fixation-switch diplopia may result.

WHAT DO WE NEED TO KNOW?

Amblyopia affects significant numbers of the population. A large proportion of these patients are likely to be diagnosed with cataract. Should we depend solely on visual acuity to decide whether cataract surgery is indicated or should we use other measures? Should we be allocating resources to treat the cataract in their amblyopic eye? If so, at what

stage? The decision depends on a clear understanding of symptoms, functional impairments, and surgical outcomes in this patient group. The issues have not received adequate attention and we believe, warrant further investigation.

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